I. Amendments to the Specification

Please replace the specification with the following. A clean version of the amended specification is enclosed as Attachment A.

~~Airbag and motor vehicle~~

AN AIRBAG AND A MOTOR VEHICLE

~~Description~~

~~Technical background of the invention~~

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to German patent applications 102004042209.5, filed September 1, 2004 and 20100408898.3, filed October 6, 2004 and PCT/EP2005/009260, filed August 27, 2005.

BACKGROUND

1. Field Of The Invention

[0002] The present invention relates to an airbag for use in ~~according to the introductory section of Claim 1,~~ a motor vehicle. ~~according to the introductory section of Claim 8 and a motor vehicle according to the introductory section of Claim 9.~~ More particularly, the present invention relates to a front or side airbag having passive internal pressure regulation.

~~State of the art~~

2. Description Of Related Art

[0003] Airbags which do not have any mechanisms for situation-dependent regulation of the internal pressure ~~can only be~~ are only ideal for a vehicle occupant of a certain weight and ~~a certain~~ height in certain specific accident situations. For ~~In~~ different size occupants accidents in different accident situations from those specified, the airbag is either too hard or too soft. If, for example, such an unregulated airbag is designed for a male wearing a ~~set~~ seat belt who is 1.80 m tall and who weighs 80 kg, such an airbag will be ~~it is~~ too hard for a female wearing a ~~set~~ seat belt who is 1.65 m tall and weighs 60 kg~~, while it would be~~ and too soft for the male described above ~~if he were~~ not wearing a seat belt.

[0004] In order to counteract this problem, airbags are known with at least one passive venting ~~arrangement,~~ arrangement via which the gas can exit from the ~~airbag are known,~~ airbag and regulate the pressure. ~~whereby the~~ The gas stream can be throttled by this venting arrangement depending on the situation. In addition, active systems exist where, for example, sensors measure the weight of the occupants and electrically adjust ~~starting from this measuring result~~ the effective cross-section of the venting arrangement based on the sensor measurements. ~~is adjusted electrically.~~ However, ~~Such~~ such systems are complex and ~~correspondingly~~ expensive and susceptible ~~liable~~ to operational errors ~~faults and disturbances~~.

[0005] An airbag with variable internal pressure is known from ~~EP 1 044 855 B1~~ US 6,419,267 whose internal pressure depends on the size of the vehicle occupant to be retained, and includes a passive ~~whose~~ venting arrangement. ~~which is responsible for this task functions passively. The airbag described here is designed with~~ This airbag includes ~~two casings, with~~ an inner and outer airbag cover.

The inner ~~casing exhibits~~ cover includes holes or permeable fabric in a certain area, so that ~~here~~ gas can penetrate from the gas chamber which is surrounded by the inner airbag cover into the area between the inner airbag cover and the outer airbag cover and from there can fully exit from the airbag. If a vehicle occupant ~~now~~ strikes against the outer airbag cover, this cover is ~~now~~ pressed in sections onto the inner airbag cover, so that a part of the holes or the permeable fabric is covered and the gas stream is reduced. The larger the occupant who strikes the airbag, the more the airstream is throttled and therefore the harder the airbag.

[0006] Because of this ~~two-casing~~ cover design, the airbag becomes relatively heavy and requires a relatively large volume of space when folded. Furthermore, such an airbag becomes strongly cushion-shaped during filling, so that it is difficult to implement a side airbag ~~of~~ with this design.

[0007] In view of the above, it is apparent that there exists a need for an improved airbag capable of regulating its internal pressure that is smaller, lighter, and can be configured as a side airbag.

~~Object of the invention~~

SUMMARY

[0008] In satisfying the above need, as well as overcoming the enumerated drawbacks and other limitations of the related art, the present invention provides ~~Starting from this point, it is the task of the invention to further develop an~~ an airbag ~~of the generic type described in such a way~~ that ~~it~~ is smaller and lighter in its ~~quiescent~~ inactive state and that ~~it~~ can also be configured ~~designed~~ as a side airbag. A further task of the invention is to create a vehicle ~~with~~ including such an airbag.

~~These tasks are solved by means of an airbag with the characteristics of Claim 1 and by motor vehicles with the characteristics of Claim 8 or 9.~~

[0009] The airbag ~~which is used also exhibits~~ of the present invention includes a venting arrangement which is formed in such a way that when a certain area of the airbag cover strikes an obstacle, in this case a vehicle occupant, the gas stream which exits from the airbag can be throttled or completely blocked to adjust the firmness of the airbag.

[0010] According to the present invention, the venting arrangement consists of at least one opening in the airbag cover and a tube joined to the cover which is connected with the airbag cover. The opening can be a hole in the airbag cover, or a gas-permeable fabric section. The ~~necessary~~ tube is ~~in particular in the embodiment described in Claim 4 very~~ easy to manufacture and only slightly increases the weight and the packing volume of the airbag. The form of the impact surface is not ~~basically~~ influenced by the tube, allowing an ~~so that an~~ airbag according to the present invention ~~can~~ to also be configured ~~designed~~ for use as a side airbag.

[0011] The ~~surface~~ area of ~~such a~~ the tube is relatively small. However, in order to achieve the desired effect despite this, namely that the pressure firmness ~~hardness~~ of the airbag ~~adapt~~ adapts to the size of the vehicle occupant and the accident situation, the tube must be located at a ~~thoughtfully~~ carefully selected area of the expanded airbag. In the case of a side airbag, the tube preferably extends basically horizontal at the height of the shoulders of a 50th percentile male in a ~~his~~ standard seating ~~positions~~ position.

[0012] In the case of a front airbag, the tube preferably extends from a lower central area to the outside, and/or it extends basically horizontally in a mid to top area. It is also possible to provide several tubes running parallel to one another.

[0013] Further objects, features and advantages of this invention will become readily apparent to persons skilled in the art after a review of the following description, with reference to the drawings and claims that are appended to and form a part of this specification.

~~Further preferred embodiments result from the further subclaims as well as from the embodiments described below with reference to the Figures. The embodiments also describe the precise functioning of the invention in more detail.~~

~~The Figures are as follows:~~

~~Short description of the drawings~~

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Figure 1 ~~A completely~~ is a completely expanded side airbag ~~with~~ including a venting arrangement according to the principles of the present ~~invention,~~ invention;

[0015] Figure 2 ~~The~~ is a section along the ~~Line~~ line A-A ~~from~~ of ~~Figure 1,~~ Figure 1;

[0016] Figure 3 ~~The installed~~ is the side airbag ~~from~~ of Figure 1 ~~with the~~ installed relative to a ~~dummy of a small person,~~ 5th percentile female occupant in a standard seating position;

[0017] Figure 4 ~~The installed~~ is the side airbag ~~from~~ of Figure 1 ~~with a~~ installed relative to a ~~dummy of a~~ 50th percentile male occupant in a standard seating ~~position,~~ position;

[0018] Figure 5 ~~The items shown in~~ is the occupant of Figure 4, ~~whereby~~ wherein the upper body of the male occupant ~~dummy~~ is rotated ~~to the front,~~ forward;

[0019] Figure 6 ~~A fully~~ is a completely expanded front airbag ~~with~~ including a venting arrangement according to the principles of the present ~~invention,~~ invention;

[0020] Figure 7 ~~The~~ is a section along the ~~Line~~ line B-B ~~from~~ of ~~Figure 6,~~ Figure 6;

[0021] Figure 8 ~~The~~ is the front airbag ~~from~~ of Figure 6 ~~with~~ installed relative to ~~dummies~~ occupants of different sizes wearing seat belts; ~~belts, whose head and breast areas are lying on the airbag,~~

[0022] Figure 9 ~~The items shown in~~ is the front airbag of Figure 8~~in the case of~~ showing the occupants ~~dummies not wearing~~ without seat belts~~,~~;

[0023] Figure 10 ~~The~~ is the front airbag ~~from~~ of ~~Figures 8 and~~ Figure 9 showing ~~with~~ a 50th percentile~~dummy~~ male occupant ~~not wearing~~ without a seat belt ~~in the case of~~ during a 30° offset frontal ~~collision,~~ impact;

[0024] Figure 11 ~~A second~~ is a second embodiment of a front airbag according to the present invention installed relative to ~~with dummies~~ occupants of different sizes wearing seat belts~~,~~;

[0025] Figure 12 ~~The items shown in~~ is the embodiment of Figure 11 ~~with~~ showing the ~~dummies not wearing~~ occupants without seat belts~~,~~;

[0026] Figure 13 ~~The front airbag from Figures 11 and~~ is the embodiment of Figure 12 showing ~~with~~ a 50th percentile ~~dummy~~ male occupant without a seat belt during a ~~in a diagonal impact offset by 30°,~~ 30° offset frontal impact;

[0027] Figure 14 ~~A variation~~ is another embodiment of the front airbag ~~shown in Figures 6 to 10 and~~ of Figure 6;

[0028] Figure 15 ~~A variation~~ is another embodiment of the front airbag ~~shown in Figures 11 to 13,~~ of Figure 11;

[0029] Figure 16 ~~A schematic representation~~ is a side view of ~~a further~~ an alternate embodiment of a front airbag ~~in active condition,~~ completely expanded within a motor vehicle;

[0030] Figure 17 ~~A bird's eye~~ is a top view of the airbag ~~from~~ of Figure ~~16,~~ 16;

{0031] Figure 18 ~~A section~~ is an enlarged section of the airbag ~~from~~ of Figure ~~16 in an enlarged sectional view,~~ 16;

[0032] Figure 19 ~~A cross-~~ is a section through the tube of the airbag ~~from~~ of Figure ~~18,~~ 16;

[0033] Figure 20 ~~A schematic representation corresponding to that~~ is a side view of the airbag of Figure 16 ~~during impact of a vehicle occupant or~~ showing an occupant ~~dummy~~ impacting ~~onto~~ the ~~airbag,~~ airbag;

[0034] Figure 21 ~~A representation corresponding to that~~ is a section of the tube of Figure 19~~, during~~ shown during the impact of the ~~a vehicle~~ occupant ~~or the dummy, showing the change in cross-section of the tube,~~ as illustrated in Figure 20;

[0035] Figure 22 ~~A section~~ is a section of an airbag ~~according to a further embodiment,~~ showing an alternate embodiment of the tube of Figure 19;

[0036] Figure 23 ~~A schematic representation of a further~~ is a side view of a third embodiment of a front airbag, configured ~~formed~~ as a passenger airbag, in contact with a female occupant ~~dummy representing a female~~; and

[0037] Figure 24 ~~The items shown in~~ is the passenger airbag of Figure 23 in contact with a male occupant ~~dummy representing a male~~.

~~Description of preferred embodiments~~

~~The innovation according to the invention can be used in side airbags and in front airbags. In a first embodiment to be described first, the airbag is a side airbag.~~

~~a) Side airbag~~

DETAILED DESCRIPTION

[0038] Referring now to the drawings, an airbag embodying the principles of the present invention is illustrated therein and designated at 10. Figure 1 shows ~~an~~ the airbag 10 in the form of a side airbag. In an upper area of the airbag 10 ~~the~~ an impact surface 12 of the airbag 10 ~~exhibits~~ includes an opening 14. From this opening 14, ~~the~~ a tube 16 extends ~~in~~ along a slightly bent ~~form, however,~~ , although mainly ~~horizontally~~ horizontal, path. The tube ~~Tube~~ 16 is formed from a fabric element 18 which is sewn onto the ~~outer cover of the airbag, and by the~~ airbag cover 19 ~~itself~~ of the airbag 10 (see ~~also~~ Figure 2). The ~~Opening~~ opening 14 can be a hole in the airbag cover 19 or a gas-permeable area of the airbag cover 19. ~~A front~~ One side of the tube 16 is open, so that an exit opening to an exterior environment is formed.

[0039] In an expanded, but non-loaded state, gas flows from ~~the~~ interior of the airbag ~~10~~ 10, through the opening ~~14~~ 14, into the tube 16 and from there into the interior of the motor vehicle. ~~vehicle, therefore to the outside from the point of view of the airbag. The same thing happens~~ This flow path is maintained if the impact surface 12 is pressed in an area beneath the tube 16. However, if one presses onto the tube 16 from the outside, and the tube is fully or partly ~~closed,~~ closed blocking some or all of the gas ~~so that no or less gas can escape~~ from escaping the ~~this~~ venting arrangement, ~~and~~ the airbag becomes ~~harder~~ more firm (i.e. pressure increases).

[0040] Figures 3 to 5 show the ~~how~~ tube 16 ~~has to be~~ positioned in the vehicle with a fully expanded airbag 10. ~~In this connection,~~ Figure 3 shows an occupant a ~~dummy~~ D1 of a 5th percentile female in her standard seating position. The ~~Tube~~ tube 16 is at the height of the neck of the female occupant D1. ~~If in~~ In the case of a

side impact, ~~dummy D1 or a vehicle~~ when the female D1 occupant strikes against the airbag 10~~, it is almost exclusively~~ the shoulder area ~~which~~ comes into contact with the ~~impact surface~~ airbag cover 19. ~~This means that in~~ In this case the tube 16 is not contacted ~~loaded~~, so that gas can escape through the tube 16 ~~this venting arrangement~~ and the airbag becomes relatively soft.

[0041] Figures 4 and 5 show ~~the situation in the case~~ a 50th percentile male occupant D2. In ~~the~~ this case ~~of a second dummy D2 representing this occupant~~, the shoulder area is at the height of the tube 16 in his standard seating position (see Figure 4). If the male occupant strikes against the airbag 10, the gas flow through the tube 16 is blocked, no gas can ~~escape~~ escape, and the airbag becomes correspondingly harder. In general, at least ~~a further venting~~ one additional opening is provided, so that the airbag does not exceed~~maintains~~ a certain maximum pressure ~~yielding quality also in this case~~.

[0042] As can be seen from Figure 5, where the male occupant D2 is in a rotated forward seating position, tube 16 is also blocked if the male occupant D2 strikes the airbag 10. This rotating position may result, for example, ~~when the upper body of the occupant has previously rotated in the longitudinal direction of the vehicle~~ because of a sudden deceleration ~~motion~~.

~~b) Front airbag~~

[0043] As ~~already~~ previously mentioned, the ~~concept according to the~~ present invention can also be used for front airbags. Figure 6 shows a first embodiment of such an airbag 10 designed as a front airbag. As is also the case with the side airbags ~~in the embodiment~~ mentioned above, the impact surface 12 carries the venting arrangement including ~~consisting of~~ an opening 14 and a tube 16.

Reference can be made to the above embodiment with regard to the mode of functioning and ~~the~~ form of the tube 16.

[0044] Figures 8 to 10 show the position of the front airbag ~~shown in~~ of Figure 6 in relation to different sized occupants ~~a dummy~~ which have ~~has~~ fallen into the airbag 10 in different accident situations. Figure 8 shows the situation in the case of a frontal collision with a vehicle occupant wearing a seat belt. The first occupant ~~dummy~~ D1 shows a 5th percentile female and the second occupant ~~dummy~~ D2 shows a 50th percentile male ~~occupant~~ and the third occupant ~~dummy~~ D3 a 95th percentile male, all wearing seat belts.

[0045] As can be seen, only the 95th percentile male occupant closes the venting arrangement, increasing the internal pressure and ~~makes~~ making the airbag correspondingly ~~hard~~ more firm. The venting arrangement remains open with the other two occupants ~~types of occupant~~.

[0046] Figure 9 shows the same situation as above with the same types of vehicle occupants, but without ~~when they are not~~ wearing seat belts. Because of the greater forward displacement of the pelvis, there is ~~an upright~~ a greater upper body angle and therefore a higher position of the breast area and the head. ~~It is possible to recognise here that~~ Here, the 95th percentile male and the 50th percentile male occupant close the venting arrangement if they are not wearing seat belts and ~~that~~ the arrangement only remains open in the case of the 5th percentile female occupant. Therefore it is possible to see that the internal pressure of the airbag not only adapts to the size of the vehicle occupants, and therefore also generally speaking to their weight, but it also adapts to the accident situation, for example, with or without seat belts ~~here with belt/without belt~~.

[0047] In Figure 10, the ~~Tube~~ tube 16 is shown arranged basically horizontally ~~in~~ with a slight curve on the impact surface 12. The curved shape is selected so that the behaviour of the system is still maintained if the upper body of the vehicle occupant is tilted when it falls into the bag because of a front impact offset to the side. ~~This is shown in~~ In Figure 10, ~~which shows~~ a 50th percentile male occupant D2 not wearing a seat belt ~~(second dummy D2)~~ in ~~the case of~~ a frontal collision offset by 30° is shown.

[0048] In the embodiments shown up to now, there are basically only two states, namely "venting arrangement open" and "venting arrangement closed". In some applications it can naturally be desirable to achieve a kind of continuous regulation of the airbag firmness ~~hardness~~. Figures 11 to 13 show an embodiment of a front airbag which fulfils this requirement.

[0049] In this embodiment, the venting arrangement ~~exhibits~~ includes two tubes 16 ~~in which~~ each covering several openings of the airbag cover ~~end respectively~~. The two tubes 16 respectively extend from a lower central area diagonally upwards. Because of this arrangement, the number of covered openings 14 in a frontal collision depends on the size of the occupant and on the accident situation, such as ~~to~~ whether the occupant is wearing a seat belt or not.

[0050] Figure 11 shows the situation with occupants ~~dummies~~ D1-D3 of different sizes, which correspond to the occupants ~~dummies~~ in Figures 8 to 10. It can be seen that the smallest occupant ~~dummy~~ D1 covers four openings, the largest occupant ~~dummy~~ D3 six openings and the central occupant ~~dummy~~ D2 five openings. The airbag therefore becomes harder as the occupants to be ~~retained~~ restrained become larger.

[0051] Figure 12 shows the situation ~~from~~ of Figure 11 with an occupant not wearing a seat belt. Here it can be seen that ~~the respective same~~ each occupant covers more openings than the embodiment of Figure 11, so that the airbag becomes correspondingly ~~harder~~ more firm.

[0052] Figure 13 shows the situation in a 30° diagonal impact and a 50th percentile male occupant ~~dummy~~ D2 not wearing a seat belt. Because of the symmetrical structure of the tubes 16 running upwards at ~~a slope~~ an angle, the number of openings 14 which are covered are the same as in the frontal collision shown in Figure 12. This means that the behaviour of the airbag is non-variant in relation to the angle of collision ~~impact~~ impact, at least within a certain range.

[0053] The firmness ~~hardness~~ of the embodiments of a front airbag described up to now does not depend on whether a pure frontal ~~collision~~ collision, or a frontal collision which is offset to the side, occurs. This is often useful and desirable. However, ~~In~~ in some vehicle types~~, however,~~ it can be desired that the front airbag behaves differently in the case of a frontal collision offset to the side than in a pure frontal collision and particularly that the airbag exhibits greater holding capacity as regards the occupant in the case of a frontal collision offset to the side.

[0054] ~~The embodiments shown in Figures 14 and 15 fulfil this requirement:~~

[0055] Figure 14 shows a variation of the airbag shown and described in Figures 6 to 10~~. Within this,~~ with Figure 14 ~~corresponds~~ corresponding to the situation ~~shown in~~ of Figure 10. In addition to a ~~the~~ first opening 14a, the airbag cover ~~exhibits~~ includes a ~~further~~ second opening 14b, which opens into the tube 16. In the case of a diagonally offset collision, as shown in Figure 14, both openings ~~14,14b~~ 14a and 14b are blocked and the airbag reaches its maximum firmness ~~hardness~~. In the case of the pure frontal collision, see again, for example, Figures 8

and 9, only the gas stream from the first opening 14a is blocked, while the second opening 14b remains ~~free~~ open and the airbag has a lesser firmness ~~hardness~~.

[0056] Figure 15 shows a variation of the front airbag described in Figures 11 to 13. ~~Here,~~ In this embodiment, there is only one tube 16, in which several holes 14 end. In the case of a diagonal impact, more holes 14 are covered, and there is no compensation for this by means of a symmetrically arranged ~~further~~ additional tube 16, so that the airbag can ~~form~~ have a greater internal pressure ~~here too~~ in the case of a diagonally offset front impact.

[0057] ~~Tubes~~ The tubes 16 ~~are led~~ extend to the edge of the airbag in all embodiments, so that the occupant cannot come into contact with hot gases being expelled from the airbag.

[0058] The embodiment shown in Figures 16 to 21 ~~exhibits~~ includes several tubes 16 which are arranged in parallel on the impact surface 12 of an airbag 10 ~~serving~~ configured as a passenger airbag, which serve as venting channels. Figure 16 shows the activated state, in which the airbag 10 is filled with gas. To simplify the drawings, the ~~The further~~ additional components required to activate the airbag 10 ~~unit~~ are not shown ~~in the figures for the sake of simplicity~~. Figure 16 shows the occupant ~~dummy~~ D2 which is about to move towards the airbag 10 which is filled with gas.

[0059] The arrangement of the tubes of airbag 10 can be seen in ~~the birds-eye~~ a top view of ~~Airbag~~ airbag 10 shown in Figure 17. One opening 14 (see Figure 18) opens into tubes (i.e., venting channels) 16, 16', 16" respectively. When the airbag 10 is inflated by being filled with gas, the gas flows out of the openings ~~16~~ 14 causing tubes 16, 16', 16" to be inflated. In the embodiment shown here, the

openings 14 open into the tube ~~at~~ a distance ~~to~~ between the two open ends of the tubes 16, 16', 16" at approximately ~~in~~ the ~~centre~~ center between the two ends.

[0060] Tubes 16, 16', 16" are each formed by a fabric element 18 connected with the cover of the airbag 10, as shown in ~~schematic form in~~ the section view of Figure 19. ~~Fabric~~ The fabric element 18 ~~consists of~~ is the same material as the airbag 10. This means that each fabric element 18 is flexible and in this embodiment takes on approximately the cross-sectional form shown in Figure 19. The cross-section through the tube 16 shown in Figure 19 is represented in the area of the opening 14 which opens into the tube 16. The fabric elements 18 of the ~~individual~~ tubes 16 ~~raise themselves from~~ rise off of the impact surface 12 of the airbag 10 ~~facing~~ towards the occupant ~~dummy~~ D2 because of the pressure ~~existing~~ in the airbag 10 and exiting through the openings 14 into the ~~individual~~ tubes 16, 16', 16". Depending on the kinetic energy with which the occupant ~~dummy~~ D2 strikes the impact surface 12 of the airbag 10 ~~with~~, the tubes 16, 16', 16"~~, these~~ are more or less deformed with regard to their cross-sectional surface, as shown in ~~schematic form in~~ Figures 20 and 21. The flexible and yielding characteristics of the fabric elements 18 of the ~~individual~~ tubes 16, 16', 16" are utilized ~~utilised~~ here. If the occupant ~~dummy~~ D2 strikes the tubes 16, 16', 16" of the airbag 10 with a higher kinetic energy, the free cross-sectional surface available for venting of the airbag 10 in the area of the impact is correspondingly ~~more strongly deformed~~ reduced and therefore its free capacity as regards gas throughflow is reduced, so that the gas contained in the airbag 10 ~~can only escape~~ escapes more slowly.~~Airbag~~ As a result, the airbag 10 is ~~then~~ harder compared with the ~~case that~~ situation when the occupant ~~dummy~~ D2 meets the activated airbag with a lower kinetic energy. In such a case, the free cross-sectional surface of the tubes 16, 16', 16" is ~~only~~ reduced to a

lesser extent ~~(if at all);~~ (if at all) and the airbag 10 is ~~therefore~~ softer~~, as~~ since the gas contained in it can flow out through the larger cross-sectional flow area ~~which remains free~~ more quickly.

[0061] Figure 22 shows a section of yet another ~~a further~~ airbag 10 ~~which exhibits~~ that includes a large number of openings 14, which each open into a short tube 16. In this embodiment, the tubes 16 serve the same purpose as the tubes in the embodiment described in Figures 16 to 21. The intention of the embodiment shown in Figure 22 is to demonstrate that the tubes 16 can, in ~~principle also~~ principle, be extremely short.

[0062] Figures 23 and 24 show ~~a further~~ another example ~~embodiment~~ of a front passenger airbag ~~which serves as a passenger airbag~~. Here, the tube 16, in which the openings 14 (not shown) end, is located in an area which, when the airbag is fully expanded, is in an area in front of the instrument panel I. ~~Tube~~ The tube 16 extends basically ~~horizontal and vertical~~ horizontally along ~~to~~ the longitudinal axis of the vehicle.

[0063] Figure 23 shows the situation with an occupant ~~a first dummy~~ D1 representing ~~of~~ a 5th percentile woman ~~women~~, contact the airbag 10. Here, the upper body of ~~the~~ occupant ~~dummy~~ D1 is already displaced forwards following the collision. It can be seen that the knee area of the occupant ~~dummy~~ D1 does not touch the tube 16, so that the airbag 10 is vented by the tube 16. The airbag is therefore relatively soft.

[0064] Figure 24 shows the situation with an occupant ~~a dummy~~ D3 which represents a 95th percentile male contacting the airbag 10. ~~Because of~~ Due to the clearly longer length of the legs of the occupant D3, compared with the occupant ~~dummy~~ D1, after a certain forwards displacement, an area above the knee of the

occupant ~~dummy~~ D3 ~~pressed~~ presses on ~~tube 16, thus closing it~~ and closes the tube 16. ~~Airbag~~ The airbag 10 is not vented, or only slightly ~~vented~~ vented, through the tube 16, ~~so that the~~ resulting in a desired increase in internal pressure and therefore firmness ~~hardness~~ of the airbag ~~occurs~~.

[0065] The location of the tube 15 in the area shown here in front of the instrument panel I, and the spatial relationship of the tube 16 to the knees ~~or~~ at an area shortly above the knees of the occupant has the advantage that ~~adaptation~~ adjustment of the internal pressure already takes place ~~completely~~ completely, or at least in ~~part~~ part, before the upper body of an occupant meets the impact surface 12. In addition, because of the different leg ~~lengths,~~ lengths of different size occupants, small and large ~~vehicle~~ occupants can be differentiated with a high degree of reliability.

[0066] As a rule ~~a further~~ an additional venting opening is present in all embodiments relating to a front airbag, so that a certain maximum pressure ~~softness~~ is ~~also present~~ maintained even if the tube or tubes 16 are completely blocked.

[0067] As a person skilled in the art will readily appreciate, the above description is meant as an illustration of implementation of the principles of this invention. This description is not intended to limit the scope or application of this invention in that the invention is susceptible to modification, variation and change, without departing from the spirit of this invention, as defined in the following claims.

~~List of reference numbers~~

~~10 Airbag~~

~~12 Impact surface~~

~~14 Opening~~

~~16 Tube~~

~~18 Fabric element~~

~~19 Airbag cover~~

~~D1 First dummy - dummy of a 5 percentile female~~

~~D2 Second dummy - dummy of a 50 percentile occupant~~

~~D3 Third dummy - dummy of a 95 percentile male~~

~~I Instrument panel~~